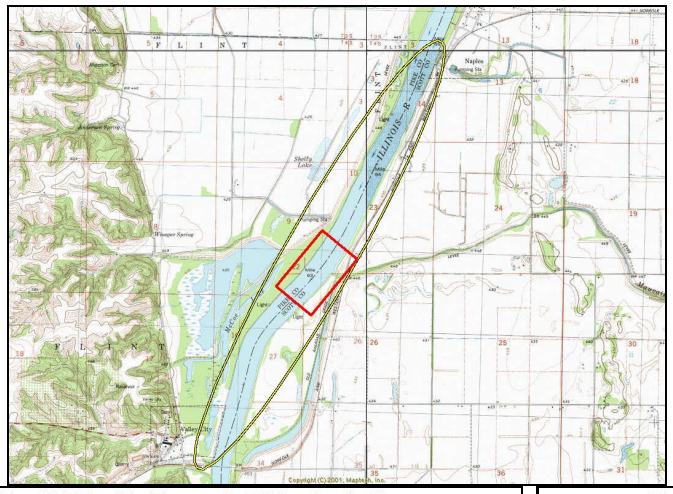
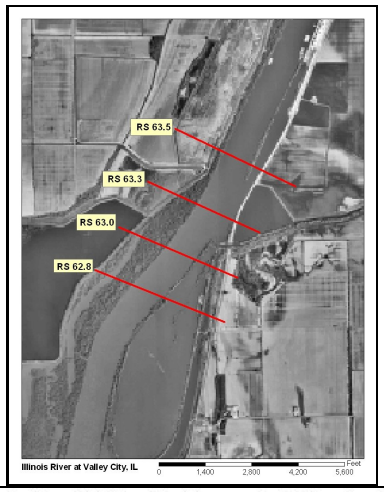
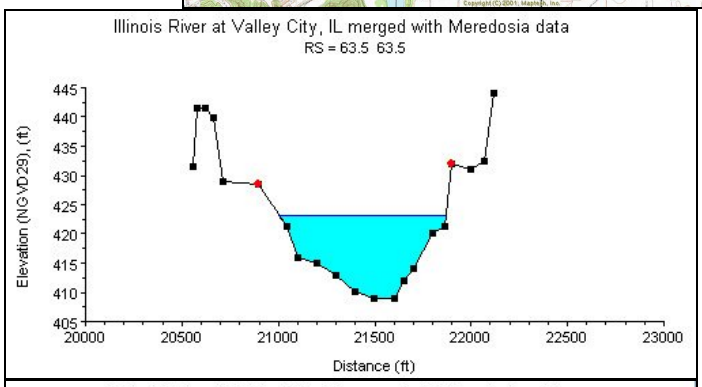
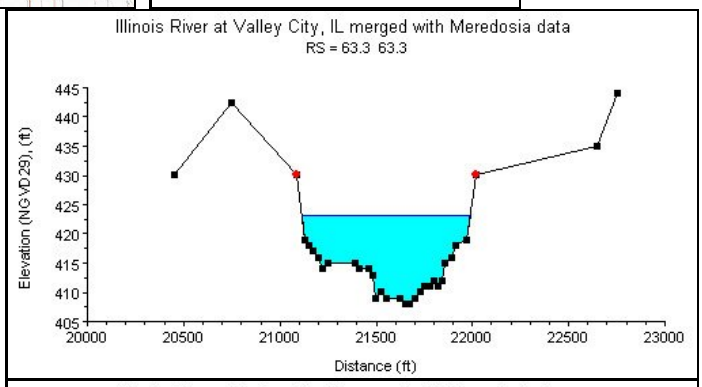
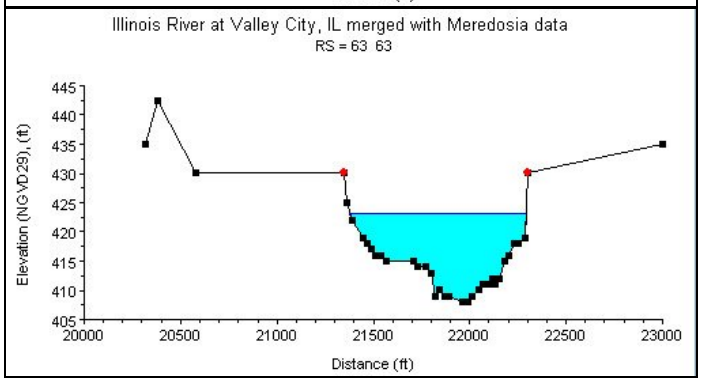
Illinois River at Valley City, IL

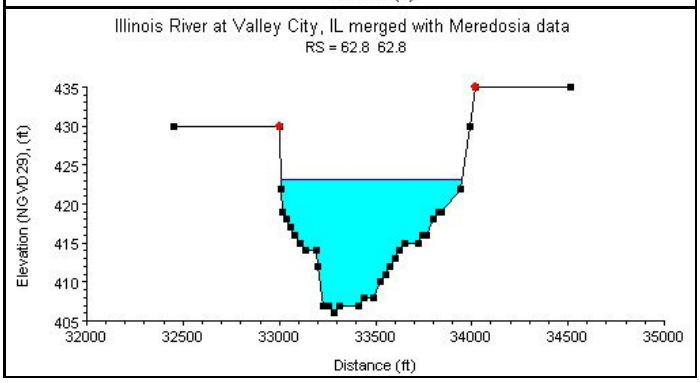












Study Reach.--The reach under consideration is a free-flowing navigation channel. The study reach, approximately 3,700 ft long, is located from the State Highway 104 bridge near Meredosia to the County Road 10 bridge near Valley City, as shown in the quadrangle map shown in the top left. There are 24 surveyed cross sections (surveyed by the U.S. Army Corps of Engineers, in August 1998) available for describing the channel geometry, four of them are in the study reach. The channel alignment, approximate variations in channel width and bank conditions, and locations of the four cross sections are shown in the aerial photo on the top right. The general shapes of cross sections in the study reach are plotted above.

Gage Location.--Lat 39°42'12", long 90°38'43", in SE1/4 NW1/4 sec.34, T.15N., R.14W., Scott County, Hydrologic Unit 07130011, on upstream side of Norfolk & Southern Corporation Railroad bridge at Flints Creek, 0.4 mi east of Valley City, 1.8 mi downstream from Mauvaise Terre Creek, and at river mi 61.3. The USGS streamgage-station number is

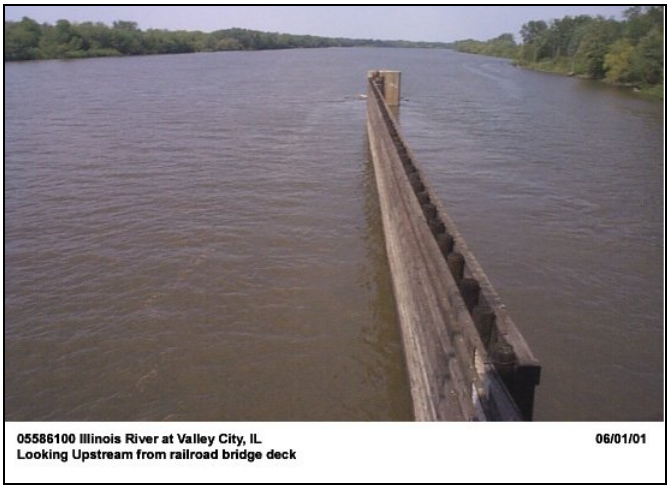
05586100.

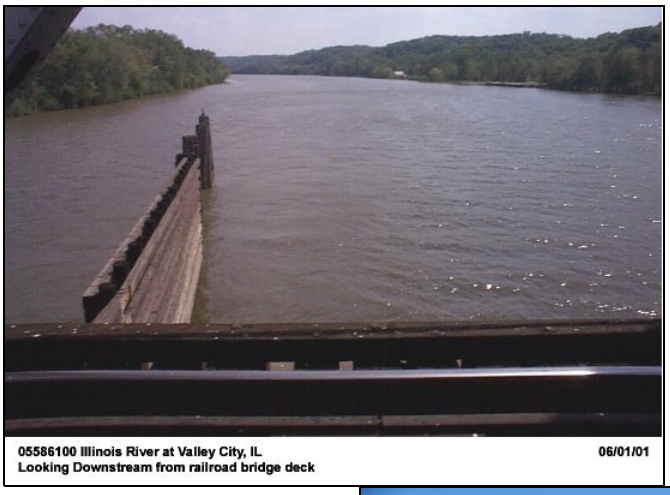
Drainage Area.--26,743 sq mi.

Gage Datum and Elevations of Reference Points.--This is a slope station site where the auxiliary gage is located at Illinois River at Meredosia, 9.5 miles upstream. Datum of both base and auxiliary gages is 418.00 ft. All elevations are in NGVD 1929 convention.

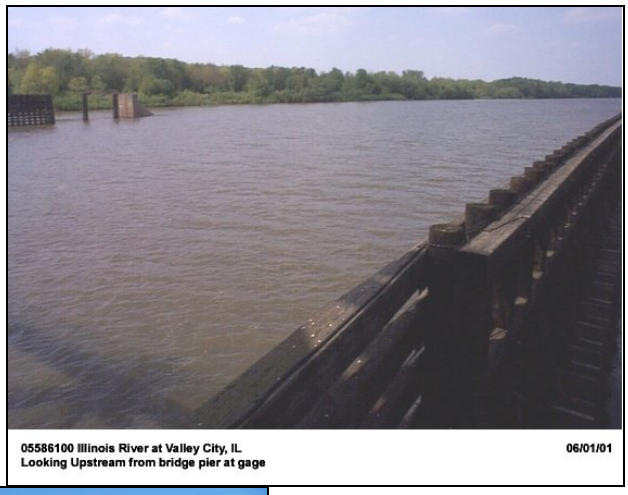
Stage, Discharge Measurements, and Computed n-Values.--Since water year 1993, discharge measurements have been made by boat using an acoustic Doppler current profiler (ADCP) in the vicinity of the Valley City gage but away from the shear fence of the railroad bridge. Events for the n-value study were selected from the actual ADCP measurements that represent main-channel flows and free of backwater effects from the Upper Mississippi River (river stage at Grafton on the Mississippi River is lower than that at Valley City on the Illinois River by 2 ft).

Date of Observation	Discharge (ft^3/s)	Average Cross Section Area (ft^2)	Hydraulic Radius (ft)	Mean Velocity (ft/s)	Slope	Coefficient of Roughness *n*
10/9/2003	4290.0	6495.3	8.37	0.66	0.000002	0.014
10/24/2002	5700.0	6565.8	8.43	0.87	0.000002	0.011
1/9/2003	5770.0	6216.5	8.14	0.93	0.000006	0.015
8/22/2003	7340.0	6782.7	8.59	1.09	0.000004	0.011
7/24/2001	8830.0	7092.9	8.81	1.25	0.000006	0.012
9/6/2001	10500.0	7205.6	8.89	1.46	0.000008	0.012
8/1/2002	10500.0	7507.8	9.11	1.40	0.000008	0.012
1/29/2002	10700.0	7385.6	9.02	1.46	0.000011	0.015
4/24/2003	11400.0	7523.9	9.12	1.52	0.000007	0.011
10/4/2000	11700.0	7101.2	8.82	1.65	0.000015	0.015
1/24/2001	14500.0	8758.3	10.06	1.66	0.000011	0.014
12/13/2001	15900.0	9105.4	10.35	1.75	0.000016	0.016
7/10/2003	19400.0	9143.8	10.38	2.12	0.000020	0.015
3/5/2007	60000.0	23906.4	11.08	2.57	0.000038	0.017





05586100 Illinois River at Valley City, IL 06/01/01
Looking Downstream from railroad bridge deck



05586100 Illinois River at Valley City, IL 06/01/01
Looking Upstream from bridge pier at gage

05586100 Illinois River at Valley City, IL 7/11/2007
Low flow, looking upstream from railroad bridge

Description of Channel.--This channel is natural in the navigable river. The streambed at Valley City consists of silt, sand, and gravel. Cross-sectional geometry is a wide semicircle. Bank materials also are mixtures of silt, sand, and gravels with dense shrubs and trees on top of the bank. The average channel width at bank points is approximately 1000 ft with an average depth 22 ft. The study reach is straight except for a small bend in the lower portion. Longitudinal variation in channel width and cross-sectional shape is gradual.

Floods.--Maximum stage known, 27.00 ft. (8 a.m. to 12 p.m.) on May 26, 1943 at Valley City. Maximum discharge, 123,000 ft^3/s, May 26-28, 1943, gage height, 28.61, May 26, 1943 at Meredosia. Flood of July 27, 1993, reached a stage of 25.95 ft., caused by backwater from the flooding on the Mississippi River. Flood stage occurs at a stage of 14.0 ft.

Estimated n-Values using Cowan s Approach.--0.016 - 0.020